UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF PREVENTION, PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

DATE: May 26, 2007

SUBJECT: Section 3 Registration of Aloe Herbal Horse Spray (EPA Reg. #: 66963-I), Containing 0.75% Citronella oil, 0.50% Cedarwood oil, and 0.378% Eucalyptus oil (Active Ingredients). Review of Product Chemistry and Acute Toxicity.

DP No.:	338682	Decision No.:	373758
PC Codes:	021901, 040505, 011550	MRID Nos.:	470293-01 through 470293-10
EPA Reg. No.:	66963-1		
Chemical Class:	Biopesticide		

FROM: Manying Xue, Chemist
BPB/BPPD (7511P)

THROUGH: Russell S. Jones, Ph.D., Senior Biologist /s/ 05/25/2007
BPB/BPPD (7511P)

TO: Todd Peterson, Regulatory Action Leader
BPB/BPPD (7511P)

CONTAINS CONFIDENTIAL BUSINESS INFORMATION

ACTION REQUESTED:

On behalf of Rhodia Inc., Lewis & Harrison Consultants has submitted an application for a Section 3 registration of Aloe Herbal Horse Spray containing 0.75% Citronella oil, 0.50% Cedarwood oil, and 0.378% Eucalyptus oil (Active Ingredients). Aloe Herbal Horse Spray is an end use product intended to be used to repel flies, gnats, mosquitoes, and other flying insects on horses.

In support of this petition, the petitioner has submitted product chemistry studies of Aloe Herbal Horse Spray at nominal concentration of 0.75% citronella oil, 0.50% cedarwood oil (as "cedar oil" on the CSF), and 0.378% eucalyptus oil of the active ingredients (MRIDs 470293-01 through 470293-04), basic Confidential Statements of Formula

(CSFs, dated 01/04/07), proposed labels, and acute toxicity studies for Aloe Herbal Horse Spray (MRIDs: 470293-05 through 470293-10).

BPPD has reviewed and evaluated the submissions for Aloe Herbal Horse Spray. The decisions are made to reflect the current OPP's policies.

RECOMMENDATIONS AND CONCLUSIONS:

1. The submitted product chemistry study for Aloe Herb Horse Spray is **Unacceptable** based on OPPTS guidelines 830 Series, but upgradeable if 1) the upper certified limit for [redacted] and the lower and upper certified limits for [redacted] are corrected on the CSF; 2) results of a flammability test are submitted; 3) results of the corrosion characteristics and flammability tests must be submitted. The waiver requests for enforcement analytical method and storage stability study are acceptable.

2. The submitted Tier I toxicity studies are **Acceptable**; no additional data are required.

3. The submitted label for the end-use product (aloe herbal horse spray (EPA Reg. #: 66963-I) is **Unacceptable**. The registrant needs to provide information for physical and chemical hazards and clarify the meaning of "human grade ingredients" in the first paragraph.

4. Aloe Herbal Horse Spray, the EP, is proposed to be used to repel flies, gnats, mosquitoes, and other flying insects on horses. Therefore there will be no Adverse Effect (NAE) on Threatened and Endangered Species.

5. No product performance study has been submitted with this application. The registrant must submit product performance study for this registration.

STUDY SUMMARIES

Product Properties (OPPTS 830 Series GLNs)

End Use Product, Aloe Herbal Horse Spray

On behalf of Rhodia Inc., Lewis & Harrison Consultants has submitted an application for the Section 3 registration of aloe herbal horse spray. In support of this petition, the petitioner has submitted product chemistry studies of the end use product, aloe herbal horse spray (MRIDs 47029301 through 4702904), and basic Confidential Statements of Formula (CSFs), dated 01/04/2007 (Table 1).

Inert ingredient information may be entitled to confidential treatment

TABLE 1. Nominal CSF concentrations and limits for Aloe Herbal Horse Spray –Basic Formulation[a]					
Ingredients (CAS number)	PC Code	Purpose	Concentration (% by weight)		
			Nominal	Lower	Upper
Active Ingredients					
Citronella oil (CAS No. 8000-29-1)	021901	Active ingredient	0.75	0.675	0.825
Cedar oil (CAS No. 8000-27-9)	040505	Active ingredient	0.50	0.45	0.55
Eucalyptus oil (CAS No. 8000-48-4)	040503	Active ingredient	0.378	0.340	0.416
Inert ingredients					
[redacted]					

[a]Data from CSF

Physical and Chemical Characteristics

The product chemistry data base for aloe herbal horse spray is essentially complete. There are no reported impurities of toxicological concern. The Series 830 physical and chemical properties are given in Table 2 .

Aloe Herbal Horse Spray is an end use product intended to be used to repel flies, gnats, mosquitoes, and other flying insects on horses. CSFs for a basic and an alternate formulation were provided. The active ingredients in both formulations (w/w) are 0.75% citronella oil, 0.50% cedarwood oil, and 0.378% eucalyptus oil. The inert ingredients (w/w) in the basic formulation are [redacted] Adequate descriptions of the beginning materials were provided. The product is formulated by a simple blending of the active and inert ingredients, and no impurities are formed. Results of a preliminary analysis were not provided. In both formulations, the upper certified limit given for [redacted] is less than the nominal concentration of [redacted] in the product. In the alternate formulation, the certified

limits given for [redacted] are incorrect. A waiver was requested for the requirement of an enforcement analytical method. The physical and chemical characteristics were adequately addressed, except the study of flammability. A waiver was requested for storage stability, and the corrosion characteristics test is ongoing.

TABLE 2. Physical and Chemical Properties for Aloe Herbal Horse Spray – Basic Formulation[a]

Guideline Reference No./Property		Description of Result	Methods
830.6302	Color	Clear, colorless @ 25°C	CCL SOP 10.12
830.6303	Physical State	Liquid @ 25°C	CCL SOP 10.12
830.6304	Odor	Not required for EP	
830.6313	Stability	Not required for EP	
830.6314	Oxidation/Reduction: Chemical Incompatibility	No signs of reaction after 24 hrs exposure to powdered iron, potassium permanganate, water, or monoammonium phosphate	44 FR 16267
830.6315	Flammability	Need to be conducted	
830.6316	Explodability	Not applicable, product does not contain any explosive ingredients	
830.6317	Storage Stability	**Waiver requested**	
830.6319	Miscibility	Not applicable, product is not to be diluted with petroleum solvents	
830.6320	Corrosion Characteristics	**Study in progress**	
830.6321	Dielectric Breakdown Voltage	Not applicable, product not for use around electrical equipment	
830.7000	pH	4.90 @ 25°C	CCL SOP 10.17
830.7050	UV/Visible Absorption	Not required for EP	
830.7100	Viscosity	18.266 mm^2/s (cSt) @ 22°C	ASTM Methods D 445 and D 446
830.7200	Melting Range	Not applicable, product is a liquid	
830.7220	Boiling Range	Not required for EP	
830.7300	Density/Relative Density/Bulk Density	0.8435 @ 23°C	CCL SOP 10.16
830.7370	Dissociation Constant in Water	Not required for EP	
830.7550	Partition Coefficient	Not required for EP	
830.7840	Water Solubility	Not required for EP	
830.7950	Vapor Pressure	Not required for EP	

[a] Data from MRID 47029304

CLASSIFICATION: UNACCEPTABLE, but upgradeable. To upgrade to acceptable, the registrant must resolve the deficiencies described in Conclusion 1 above. The waiver requests for enforcement analytical method and storage stability study are acceptable.

Acute Toxicity (OPPTS 870.1100 - 1300 & 870.2400 – 2600)

On behalf of Rhodia Inc., Lewis & Harrison Consultants has submitted acute toxicity studies(MRIDs: 470293-05 through -10) for Aloe Herbal Horse Spray containing 0.75% Citronella Oil, 0.50% Cedar Oil, and 0.378% Eucalyptus Oil (active ingredients) as test material for acute oral toxicity, acute dermal toxicity, acute inhalation toxicity and skin sensitization studies. The studies were conducted at Product Safety Laboratories, Dayton, NJ. The data are summarized in the Table below. Details of the studies may be found in the attached DERs.

TABLE 3 Acute Toxicity Profile - Test Substance

Guideline No.	Study Type	MRID(s)	Results	Toxicity Category
870.1100	Acute oral [rat]	47029305	LD_{50} = >5000 mg/kg	IV
870.1200	Acute dermal [rat]	47029306	LD_{50} = >5000 mg/kg	IV
870.1300	Acute inhalation [rat]	47029307	The inhalation LC_{50} for males, females, and combined was > 2.06 mg/L.	IV
870.2400	Acute eye irritation [rabbit]	47029308	The maximum average score was 18.0 at one hour after test material instillation. Aloe Herbal Horse Spray was moderately irritating.	III
870.2500	Acute dermal irritation [rabbit]	47029309	The primary irritation index was 3.8	III
870.2600	Skin sensitization [guinea pig]	47029310	Aloe Herbal Horse Spray was a dermal sensitizer	a dermal sensitizer

CLASSIFICATION: ACCEPTABLE; no additional data are required.

Product Performance (Nonguideline)

No product performance study has been submitted with this application. The registrant must submit product performance study for this registration.

Non-Target Organisms and Endangered Species Assessment

Aloe Herbal Horse Spray, the EP, is proposed to be used to repel flies, gnats, mosquitoes, and other flying insects on horses. Therefore there will be no exposure to non-target organisms and No Adverse Effects (NAE) on Threatened and Endangered Species.

cc: D. Benmhend, R. S. Jones; BPPD Chron File; OHAD/ARS
M. Xue, BPPD, 05/26/07

DATA EVALUATION RECORD

CITRONELLA OIL
CEDARWOOD OIL
EUCALYPTUS OIL
(Aloe Herbal Horse Spray)

STUDY TYPES: **Product Identity and Composition (OPPTS 830.1100)**
Description of Beginning Materials (OPPTS 830.1200)
Description of Formulation Process (OPPTS 830.1200)
Discussion of Formation of Impurities (OPPTS 830.1400)
Preliminary Analysis (OPPTS 830.1700)
Certified Limits (OPPTS 830.1750)
Enforcement Analytical Method (OPPTS 830.1800)
Physical and Chemical Characteristics (OPPTS 830.6302-830.7950)

MRIDs 47029301-47029304

Prepared for
Biopesticides and Pollution Prevention Division
Office of Pesticide Programs
U.S. Environmental Protection Agency
One Potomac Yard
2777 South Crystal Drive
Arlington, VA 22202

Prepared by
Toxicology and Hazard Assessment Group
Environmental Sciences Division
Oak Ridge National Laboratory
Oak Ridge, TN 37830
Task Order No. 07-033

Primary Reviewer:
Eric B. Lewis, M.S.
Signature: _____
Date: _____

Secondary Reviewers:
Sylvia Milanez, Ph.D., D.A.B.T.
Signature: _____
Date: _____

Robert H. Ross, M.S., Group Leader
Signature: _____
Date: _____

Quality Assurance:
Lee Ann Wilson, M.A.
Signature: _____
Date: _____

Disclaimer

This review may have been altered subsequent to the contractor=s signatures above.

Oak Ridge National Laboratory managed and operated by UT-Battelle, LLC., for the U.S. Department of Energy under Contract No. DE-AC05-00OR22725.

DATA EVALUATION RECORD

EPA Secondary Reviewer:	**Manying Xue, Chemist, 05/26/2007** Manying Xue
STUDY TYPE:	Product Identity and Composition (OPPTS 830.1100) Description of Beginning Materials (OPPTS 830.1200) Description of Formulation Process (OPPTS 830.1200) Discussion of Formation of Impurities (OPPTS 830.1400) Preliminary Analysis (OPPTS 830.1700) Certified Limits (OPPTS 830.1750) Enforcement Analytical Method (OPPTS 830.1800) Physical and Chemical Characteristics (OPPTS 830.6302-830.7950)
MRID NO:	47029301-47029304
DECISION NO:	373758
DP BARCODE:	DP338682
TEST MATERIAL:	Aloe Herbal Horse Spray (a.i., 0.75% w/w citronella oil; 0.50% w/w cedarwood oil; 0.378% w/w eucalyptus oil)
PROJECT STUDY NO:	MRID 47029301 - 47029303: Not provided MRID 47029304: Study No. 3660-01
SPONSOR:	Espree Animal Products, Inc., 3250 Stone Myers Parkway, Grapevine, TX 76051
TESTING FACILITY:	MRIDs 47029301 - 47029303: None MRID 47029304: Case Consulting Laboratories, Inc., 622 Route Ten, Whippany, NJ 07981
TITLE OF REPORT:	MRID 47029301: Aloe Herbal Horse Spray: Product Identity and Composition. Source Active Ingredients MRID 47029302: Aloe Herbal Horse Spray: Product Identity and Composition, Beginning Materials, Formulating Process, Formation of Impurities, Preliminary Analysis, and Certified Limits. MRID 47029303: Aloe Herbal Horse Spray: Waiver Request for Enforcement Analytical Method and Storage Stability MRID 47029304: Physical and Chemical Characteristics of Aloe Herbal Horse Spray: Physical State, Oxidation/Reduction, Corrosion Characteristics, pH, Viscosity and Relative Density
AUTHORS:	MRIDs 47029301 - 47029303: Lewis & Harrison, LLC MRID 47029304: Sinning, D.J.
STUDY COMPLETED:	MRIDs 47029301 - 47029303: January 3, 2007 MRID 47029304: November 28, 2006
GOOD LABORATORY PRACTICE:	MRID 47029301: A signed and dated GLP statement was included. The report is a discussion of product identity of the source active ingredients. The information was provided to the registrant, and the registrant does not know if GLP standards were used. MRID 47029302: A signed and dated GLP statement was included. The report is a discussion and GLP standards do not

apply.

MRID 47029303: A signed and dated GLP statement was included. The report is a waiver request, and GLP standards do not apply.

MRID 47029304: A signed and dated GLP statement was included. The study was conducted in compliance with GLP standards. The test substance stability, synthesis, and characterization are held by the sponsor, and the performing laboratory does not know if these data conform to GLP standards.

CONCLUSION: Aloe Herbal Horse Spray is an end use product intended to be used to repel flies, gnats, mosquitoes, and other flying insects on horses. CSFs for a basic and an alternate formulation were provided. The active ingredients in both formulations (w/w) are 0.75% citronella oil, 0.50% cedarwood oil, and 0.378% eucalyptus oil. The inert ingredients (w/w) in the basic formulation are [redacted] Adequate descriptions of the beginning materials were provided. The product is formulated by a simple blending of the active and inert ingredients, and no impurities are formed. Results of a preliminary analysis were not provided. In both formulations, the upper certified limit given for [redacted] is less than the nominal concentration of [redacted] in the product. In the alternate formulation, the certified limits given for [redacted] are incorrect. A waiver was requested for the requirement of an enforcement analytical method. The physical and chemical characteristics were adequately addressed, with the exception of flammability. A waiver was requested for storage stability, and the corrosion characteristics test is ongoing.

CLASSIFICATION: **Unacceptable**, but upgradeable if 1) the upper certified limit for [redacted] and the lower and upper certified limits for [redacted] are corrected on the CSF; and 2) results of a flammability test are submitted. Results of the corrosion characteristics test must be submitted upon its conclusion.

CONTAINS CONFIDENTIAL BUSINESS INFORMATION

Test Material: Aloe Herbal Horse Spray (a.i., 0.75% w/w citronella oil; 0.50% w/w cedarwood oil; 0.378% w/w eucalyptus oil)

Inert ingredient information may be entitled to confidential treatment

Manufacturing process information may be entitled to confidential treatment

I. **PRODUCT IDENTITY AND COMPOSITION:** Aloe Herbal Horse Spray is an end use product intended to be used to repel flies, gnats, mosquitoes, and other flying insects on horses. CSFs for a basic and an alternate formulation were provided. The active ingredients in both formulations (w/w) are 0.75% citronella oil, 0.50% cedarwood oil (given as "cedar oil" on the CSF), and 0.378% eucalyptus oil. The inert ingredients (w/w) in the basic formulation are [redacted]

Deficiencies: None.

II. **DESCRIPTION OF BEGINNING MATERIALS:** The beginning materials for the basic formulation of Aloe Herbal Horse Spray are citronella oil; cedarwood oil; eucalyptus oil; [redacted] MSDSs for the beginning materials were provided in MRID 47029302.

Deficiencies: None.

III. **DESCRIPTION OF FORMULATION PROCESS:** Aloe Herbal Horse Spray is formulated in a batch process by a simple mixing of the active and inert ingredients. [redacted]

Deficiencies: None.

IV. **DISCUSSION OF FORMATION OF IMPURITIES:** No impurities are expected to form during the formulation process or during transport and/or storage of the product.

Deficiencies: None.

V. **PRELIMINARY ANALYSIS:** The registrant states on p. 4 of MRID 47029302 that preliminary analysis is not required since the product is produced by a non-integrated system using a registered manufacturing use product. According to the CSF and the description of the formulation process provided in MRID 47029302, a registered manufacturing use product is not used, and the three active ingredients are not registered. However, the registrant provided certificates of analysis for five lots of the three active ingredients in MRID 47029301, which satisfies the preliminary analysis requirement.

Deficiencies: None.

VI. **CERTIFIED LIMITS:** Table 2 lists the nominal concentrations and certified limits for the ingredients in Aloe Herbal Horse Spray. [redacted]

TABLE 2. Nominal CSF concentrations and limits for Aloe Herbal Horse Spray –Basic Formulation[a]

Ingredients (CAS number)	PC Code	Purpose	Concentration (% by weight)		
			Nominal	Lower	Upper
Active Ingredients					
Citronella oil (CAS No. 8000-29-1)	021901	Active ingredient	0.75	0.675	0.825
Cedar oil (CAS No. 8000-27-9)	040505	Active ingredient	0.50	0.45	0.55
Eucalyptus oil (CAS No. 8000-48-4)	040503	Active ingredient	0.378	0.340	0.416
Inert ingredients					
[redacted]					

[a]Data from CSF

Deficiencies: The upper certified limit for [redacted] must be adjusted to a value higher than the nominal concentration of [redacted] in the product. In the alternate

formulation, the lower and upper certified limits for [redacted] must be corrected to [redacted] respectively.

VII. ENFORCEMENT ANALYTICAL METHOD: The registrant requested a waiver of the requirement for an enforcement analytical method for each active ingredient in the product. 40 CFR 158.155(f) states that if the identity of an ingredient cannot be specified as a discrete chemical substance (such as mixtures that cannot be characterized) the registrant must provide sufficient information to enable the Agency to identify its source and qualitative composition. The registrant provided specification sheets and certificates of analysis for five lots of each active ingredient in MRID 47029301.

Each of the active ingredients in Aloe Herbal Horse Spray is an essential oil composed of a group of chemicals. In some cases, individual chemicals are an integral component of more than one of the active ingredients. The registrant provided results for a typical analysis of each of the pure essential oils in MRID 47029303. The results show that 11 of the individual chemicals are integral components of both citronella oil and eucalyptus oil. The individual analytical results for the essential oils also show that many of the individual chemicals are found only at very low concentrations in the pure oil. Since each essential oil is present at a concentration of <1% in the formulated product, many of the individual chemicals in the essential oils will be present in the product at levels below the limits of detection. For these reasons, the registrant does not believe that the end use product can be analyzed for each active ingredient.

The registrant also notes that citronella oil and cedarwood oil are classified as minimum risk pesticides under 40 CFR 152.25 (f)(1) and that two [redacted] inert ingredients in the basic formulation [redacted] are List 4A inerts. Thus, approximately [redacted] of the formulated product qualifies as a minimum risk pesticide.

Additionally, citronella oil and eucalyptus oil are designated as GRAS by FDA, and cedarwood oil is listed as a food additive. The alcohols and terpenes of cedarwood oil are also considered GRAS by FDA. On p. 9 of MRID 47029303, the registrant states that an FDA listing is included as an attachment to the report. This attachment was not included in MRID 47029303.

Deficiencies: None.

VIII. PHYSICAL AND CHEMICAL CHARACTERISTICS:

1. **Methods**: The methods used to determine the physical/chemical characteristics are provided in Table 2.

2. **Results**: The physical/chemical characteristics of Aloe Herbal Horse Spray are provided in Table 2. A waiver for the storage stability requirement was requested based on the inability to analyze for the individual active ingredients in the product

(see enforcement analytical method section). The corrosion characteristics study is in progress.

Deficiencies: To address the flammability requirement, the registrant submitted "not applicable since Aloe Herbal Horse Spray does not contain any combustible liquids." The reviewer notes that the MSDSs for all the ingredients except [redacted] give a flash point. A flammability test meeting the requirements of OPPTS 830.6315 should be conducted. Results of the corrosion characteristics testing will need to be submitted upon its completion.

TABLE 3. Physical and Chemical Properties for Aloe Herbal Horse Spray – Basic Formulation[a]			
Guideline Reference No./Property		**Description of Result**	**Methods**
830.6302	Color	Clear, colorless @ 25°C	CCL SOP 10.12
830.6303	Physical State	Liquid @ 25°C	CCL SOP 10.12
830.6304	Odor	Not required for EP	
830.6313	Stability	Not required for EP	
830.6314	Oxidation/Reduction: Chemical Incompatibility	No signs of reaction after 24 hrs exposure to powdered iron, potassium permanganate, water, or monoammonium phosphate	44 FR 16267
830.6315	Flammability	Not applicable, product does not contain any combustible liquids	
830.6316	Explodability	Not applicable, product does not contain any explosive ingredients	
830.6317	Storage Stability	**Waiver requested**	
830.6319	Miscibility	Not applicable, product is not to be diluted with petroleum solvents	
830.6320	Corrosion Characteristics	**Study in progress**	
830.6321	Dielectric Breakdown Voltage	Not applicable, product not for use around electrical equipment	
830.7000	pH	4.90 @ 25°C	CCL SOP 10.17
830.7050	UV/Visible Absorption	Not required for EP	
830.7100	Viscosity	18.266 mm^2/s (cSt) @ 22°C	ASTM Methods D 445 and D 446
830.7200	Melting Range	Not applicable, product is a liquid	
830.7220	Boiling Range	Not required for EP	
830.7300	Density/Relative Density/Bulk Density	0.8435 @ 23°C	CCL SOP 10.16
830.7370	Dissociation Constant in Water	Not required for EP	
830.7550	Partition Coefficient	Not required for EP	
830.7840	Water Solubility	Not required for EP	
830.7950	Vapor Pressure	Not required for EP	

[a] Data from MRID 47029304

IX. ADDITIONAL REVIEWER=S COMMENTS: None.

DATA EVALUATION RECORD

ALOE HERBAL HORSE SPRAY

STUDY TYPE: ACUTE ORAL TOXICITY - RAT (870.1100)
MRID 47029305

Prepared for
Biopesticides and Pollution Prevention Division
Office of Pesticide Programs
U.S. Environmental Protection Agency
One Potomac Yard
2777 South Crystal Drive
Arlington, VA 22202

Prepared by
Toxicology and Hazard Assessment Group
Environmental Sciences Division
Oak Ridge National Laboratory
Oak Ridge, TN 37831
Task Order No. 07-033

Primary Reviewer:
Susan Chang, M.S. Signature: _____
Date: _____

Secondary Reviewers:
H. Tim Borges, M.T.(A.S.C.P.), Ph.D., D.A.B.T. Signature: _____
Date: _____

Robert H. Ross, M.S., Group Leader Signature: _____
Date: _____

Quality Assurance:
Eric Lewis, M.S. Signature: _____
Date: _____

Disclaimer

This review may have been altered subsequent to the contractor's signatures above.

Oak Ridge National Laboratory managed and operated by UT-Battelle, LC., for the U.S. Department of Energy under Contract No. DE-AC05-00OR22725.

DATA EVALUATION RECORD

EPA Secondary Reviewer:	**Manying Xue, Chemist, 05/26/2007**
STUDY TYPE:	Acute Oral Toxicity - Rats (OPPTS 870.1100)
MRID NO:	47029305
DP BARCODE NO:	DP 338682
CASE NO:	Not reported
DECISION NO:	373758
TEST MATERIAL:	Aloe Herbal Horse Spray (EPA Reg. No. 66963-I, 0.75% Citronella Oil, 0.50% Cedar Oil, and 0.378% Eucalyptus Oil Eucalyptus Globulus, active ingredients)
PROJECT NO:	21101
SPONSOR:	Espree Animal Products, Inc., Grapevine, TX
TESTING FACILITY:	Eurofins/Product Safety Laboratories, Dayton, NJ
TITLE OF REPORT:	Acute Oral Toxicity Up and Down Procedure in Rats
AUTHOR:	Jennifer Durando
STUDY COMPLETED:	December 20, 2006
GOOD LABORATORY PRACTICE:	GLP Compliant
CONCLUSION:	The oral LD_{50} for female rats was greater than 5000 mg/kg.
CLASSIFICATION:	ACCEPTABLE -- TOXICITY CATEGORY IV

I. STUDY DESIGN:

1. **Test Material**: Aloe Herbal Horse Spray containing 0.75% Citronella Oil, 0.50% Cedar Oil, and 0.378% Eucalyptus Oil Eucalyptus Globulus as active ingredients

2. **Test Animals:** Three female Sprague-Dawley rats were received from Ace Animals, Inc., Boyertown, PA, and weighed 204-231 g on the day of dosing. The young adult animals, 11 weeks old, were housed individually in suspended stainless steel cages with mesh floors. The animals were fed Purina Rodent Chow No. 5012. Filtered tap water was available *ad libitum*. The environmental conditions of the animal room were as follows: temperature, 19-23°C; relative humidity, 31-69%; and photoperiod, 12 hour light/dark cycle. Air changes per hour were not reported.

3. **Methods:** Rats were ear-tagged: Nos. 3101, 3102, and 3103 and were acclimated for 23 or 24 days and fasted overnight prior to dosing. The test material (5000 mg/kg body weight) was dosed by gavage (Table 1). Body weight was recorded prior to dosing, and on days 7 and 14. The test animals were observed for mortality and clinical signs of toxicity during the first several hours post-dosing and at least daily for 14 days. All animals were necropsied.

II. RESULTS:

1. **Mortality:** All rats survived the study.

TABLE 1. Doses, mortality/animals treated

Dose (mg/kg)	Males	Females	Combined
5000	-	0/3	-

Data taken from p. 10, MRID 47029305.

2. **Body Weight:** All rats gained weight during the study.

3. **Clinical Observations:** With the exception of one rat that had soft feces 3-4 hours post dosing, all rats appeared active and healthy throughout the study.

4. **Gross Necropsy:** No gross abnormalities were noted at necropsy.

III. DISCUSSION:

The oral LD_{50} for female rats was greater than 5000 mg/kg. This places Aloe Herbal Horse Spray in TOXICITY CATEGORY IV. The packet classification is **ACCEPTABLE.**

DATA EVALUATION RECORD

ALOE HERBAL HORSE SPRAY

STUDY TYPE: ACUTE DERMAL TOXICITY - RAT (870.1200)
MRID 47029306

Prepared for
Biopesticides and Pollution Prevention Division
Office of Pesticide Programs
U.S. Environmental Protection Agency
One Potomac Yard
2777 South Crystal Drive
Arlington, VA 22202

Prepared by
Toxicology and Hazard Assessment Group
Environmental Sciences Division
Oak Ridge National Laboratory
Oak Ridge, TN 37831
Task Order No. 07-033

Primary Reviewer:
Susan Chang, M.S.

Signature: _____
Date: _____

Secondary Reviewers:
H. Tim Borges, M.T.(A.S.C.P.), Ph.D., D.A.B.T.

Signature: _____
Date: _____

Robert H. Ross, M.S., Group Leader

Signature: _____
Date: _____

Quality Assurance:
Eric Lewis, M.S.

Signature: _____
Date: _____

Disclaimer

This review may have been altered subsequent to the contractor's signatures above.

Oak Ridge National Laboratory managed and operated by UT-Battelle, LLC., for the U.S. Department of Energy under Contract No. DE-AC05-00OR22725.

DATA EVALUATION RECORD

EPA Secondary Reviewer:	**Manying Xue, Chemist, 05/26/2007**
STUDY TYPE:	Acute Dermal Toxicity - Rats (OPPTS 870.1200)
MRID NO:	47029306
DP BARCODE NO:	DP 338682
CASE NO:	Not reported
DECISION NO:	373758
TEST MATERIAL:	Aloe Herbal Horse Spray (EPA Reg. No. 66963-I, 0.75% Citronella Oil, 0.50% Cedar Oil, and 0.378% Eucalyptus Oil Eucalyptus Globulus, active ingredients)
PROJECT NO:	21102
SPONSOR:	Espree Animal Products, Inc., Grapevine, TX
TESTING FACILITY:	Eurofins/Product Safety Laboratories, Dayton, NJ
TITLE OF REPORT:	Acute Dermal Toxicity Study in Rats – Limit Test
AUTHOR:	Jennifer Durando
STUDY COMPLETED:	December 20, 2006
GOOD LABORATORY PRACTICE:	GLP Compliant
CONCLUSION:	The dermal LD_{50} for males, females, and combined was greater than 5000 mg/kg.
CLASSIFICATION:	ACCEPTABLE -- TOXICITY CATEGORY IV

I. STUDY DESIGN:

1. **Test Material:** Aloe Herbal Horse Spray containing 0.75% Citronella Oil, 0.50% Cedar Oil, and 0.378% Eucalyptus Oil Eucalyptus Globulus as active ingredients.

2. **Test Animals:** Five male and five female Sprague-Dawley rats were received from Ace Animals, Inc., Boyertown, PA, were assigned to groups, and weighed 247-254 g (males) and 190-206 g (females) on the day of treatment. The young adult animals, 8-9 weeks old, were housed individually in suspended stainless steel cages with mesh floors. The animals were fed Purina Rodent Chow No. 5012 and filtered tap water was available *ad libitum*. The environmental conditions of the animal room were as follows: temperature, 20-23°C; relative humidity, 30-70%; and photoperiod, 12 hour light/dark cycle. Air changes per hour were not reported.

3. **Methods:** Rats were ear-tagged: Male – Nos. 3201 to 3205; Female – Nos. 3206 to 3210. The rats were acclimated for 9 days. The test material (5000 mg/kg body weight) was applied evenly over a 2 inch x 3 inch area (approximately 10% of the body surface) on the dorsal trunk and the treatment site covered with a gauze pad. The gauze pad and entire trunk were wrapped with Durapore tape. The coverings were removed after 24 hours and excess test material removed. The test animals were observed during the first several hours after treatment for mortality, signs of gross toxicity, and behavior changes and daily thereafter for 14 days. The rats were weighed prior to treatment and on days 7 and 14. The rats were euthanized on day 14 and necropsied.

II. RESULTS:

1. **Mortality:** All rats survived the study.

TABLE 1. Doses, mortality/animals treated

Dose (mg/kg)	Males	Females	Combined
5000	0/5	0/5	0/10

Data taken from p. 12, MRID 47029306.

2. **Clinical Observations:** Erythema and edema were noted at the dose site on two males and five females on days 1, 2, 3, and/or 4. All rats appeared active and healthy throughout the study.

3. **Body Weight:** All rats gained weight during the study.

4. **Gross Necropsy:** No gross abnormalities were noted at necropsy.

III. DISCUSSION:

The acute dermal LD_{50} for males, females, and combined was greater than 5000 mg/kg. This places Aloe Herbal Horse Spray in TOXICITY CATEGORY IV. The packet classification is **ACCEPTABLE.**

DATA EVALUATION RECORD

ALOE HERBAL HORSE SPRAY

STUDY TYPE: ACUTE INHALATION TOXICITY - RAT (870.1300)
MRID 47029307

Prepared for
Biopesticides and Pollution Prevention Division
Office of Pesticide Programs
U.S. Environmental Protection Agency
One Potomac Yard
2777 South Crystal Drive
Arlington, VA 22202

Prepared by
Toxicology and Hazard Assessment Group
Environmental Sciences Division
Oak Ridge National Laboratory
Oak Ridge, TN 37831
Task Order No. 07-033

Primary Reviewer:
Susan Chang, M.S. Signature: _____
Date: _____

Secondary Reviewers:
H. Tim Borges, M.T.(A.S.C.P.), Ph.D., D.A.B.T. Signature: _____
Date: _____

Robert H. Ross, M.S., Group Leader Signature: _____
Date: _____

Quality Assurance:
Eric Lewis, M.S. Signature: _____
Date: _____

Disclaimer

This review may have been altered subsequent to the contractor's signatures above.

Oak Ridge National Laboratory managed and operated by UT-Battelle, LC., for the U.S. Department of Energy under Contract No. DE-AC05-00OR22725.

DATA EVALUATION RECORD

EPA Secondary Reviewer:	**Manying Xue, Chemist, 05/26/2007**
STUDY TYPE:	Acute Inhalation Toxicity - Rats (OPPTS 870.1300)
MRID NO:	47029307
DP BARCODE NO:	DP 338682
CASE NO:	Not reported
DECISION NO:	373758
TEST MATERIAL:	Aloe Herbal Horse Spray (EPA Reg. No. 66963-I, 0.75% Citronella Oil, 0.50% Cedar Oil, and 0.378% Eucalyptus Oil Eucalyptus Globulus, active ingredients)
PROJECT NO:	21103
SPONSOR:	Espree Animal Products, Inc., Grapevine, TX
TESTING FACILITY:	Eurofins/Product Safety Laboratories, Dayton, NJ
TITLE OF REPORT:	Acute Inhalation Toxicity Study in Rats – Limit Test
AUTHOR:	Jennifer Durando
STUDY COMPLETED:	December 20, 2006
GOOD LABORATORY PRACTICE:	GLP Compliant
CONCLUSION:	The inhalation LC_{50} for males, females, and combined was > 2.06 mg/L.
CLASSIFICATION:	ACCEPTABLE -- TOXICITY CATEGORY IV

I. STUDY DESIGN:

1. **Test Material:** Aloe Herbal Horse Spray containing 0.75% Citronella Oil, 0.50% Cedar Oil, and 0.378% Eucalyptus Oil Eucalyptus Globulus as active ingredients.

2. **Test Animals:** Five male and five female Sprague-Dawley rats were received from Ace Animals, Inc., Boyertown, PA, were assigned to groups, and weighed 254-266 g (males) and 180-225 g (females) on the day of treatment. The young adult animals, 8-9 weeks old, were housed individually in suspended stainless steel cages with mesh floors. The animals were fed Purina Rodent Chow No. 5012. Tap water was available *ad libitum*. The environmental conditions of the animal room were as follows: temperature, 14-22°C; relative humidity, 30-66%; and photoperiod, 12 hour light/dark cycle. Air changes per hour were not reported.

3. **Methods:** Rats were ear-tagged: Male – Nos. 3301 to 3305; Female – Nos. 3306 to 3310. The rats were acclimated for 10 days prior to exposure. The animals were exposed to the concentration shown in Table 1. The rats were exposed nose-only in a Mini Nose-Only Inhalation Chamber (ADG Developments Ltd) for four hours and one minute. They were observed during exposure, upon removal from the chamber, and at least once daily thereafter for 14 days. They were weighed prior to test material exposure and on days 7 and 14. All rats were sacrificed and necropsied on day 14.

TABLE 1. Concentrations, exposure conditions, mortality/animals treated

Nominal Conc. (mg/L)	Grav. Conc. (mg/L)	MMAD (µm)	GSD (µm)	Particles ≤3.3 µm (%)	Temp (°C)	Humidity (%)	Mortality		
							Male	Female	Combined
13.08	2.06	2.4-2.6	1.87-1.90	~83	21-22	53-57	0/5	0/5	0/10

Data taken from Tables 4-6, pp. 9, 11, and 16-18, MRID 46523206.

Generation of the test atmosphere and description of the chamber: The exposure atmosphere was generated using a 1/4 inch JCO atomizer (Spraying Systems Inc.), FC3 fluid cap and AC1502 air cap (Robert Miller Associates). The test material was metered to the atomization nozzle through Tygon tubing using a pump. Filtered air was supplied by an air compressor connected to the spray atomization nozzle. Additional filtered compressed mixing air was supplied directly to the exposure chamber from a compressed air tank. The average total airflow was 25.6-25.9 liters/min and the nose-only exposure chamber volume was 6.7 L. Time to equilibrium was approximately 1 min.

Test atmosphere concentration: During exposure, gravimetric samples were collected from the breathing zone of the animals six times, using glass fiber filters. Filter papers were weighed before and after collection to determine the mass collected. The value was divided by the total volume of air sampled to determine the chamber concentration. The average results are in Table 1 above.

Particle size determination: Particle size for each exposure concentration was determined twice using an eight-stage Andersen cascade impactor. The test material concentration collected at each stage was determined gravimetrically. The mass median aerodynamic diameter and geometric standard deviation were determined graphically using two-cycle logarithmic probit axes. Results are in Table 1 above.

II. RESULTS:

1. **Mortality:** All rats survived the study.

2. **Clinical Observations:** Clinical signs of toxicity were not reported for the period during exposure. Irregular respiration, hunched posture, moist rales, and/or hypoactivity were observed upon removal of the animals from the chamber. All animals had reduced fecal volume on Days 1 and/or 2 with recovery by Day 4 and appeared active and healthy throughout the rest of the observation period.

3. **Body Weight:** All rats gained weight during the study.

4. **Gross Necropsy:** No gross abnormalities were noted at necropsy.

III. DISCUSSION:

The inhalation LC_{50} for males, females, and combined was > 2.06 mg/L. This places Aloe Herbal Horse Spray in TOXICITY CATEGORY IV. The packet classification is **ACCEPTABLE.**

DATA EVALUATION RECORD

ALOE HERBAL HORSE SPRAY

STUDY TYPE: PRIMARY EYE IRRITATION - RABBIT (870.2400)
MRID 47029308

Prepared for
Biopesticides and Pollution Prevention Division
Office of Pesticide Programs
U.S. Environmental Protection Agency
One Potomac Yard
2777 South Crystal Drive
Arlington, VA 22202

Prepared by
Toxicology and Hazard Assessment Group
Environmental Sciences Division
Oak Ridge National Laboratory
Oak Ridge, TN 37831
Task Order No. 07-033

Primary Reviewer:
Susan Chang, M.S. Signature: _____
Date: _____

Secondary Reviewers:
H. Tim Borges, M.T.(A.S.C.P.), Ph.D., D.A.B.T. Signature: _____
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Robert H. Ross, M.S., Group Leader Signature: _____
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Quality Assurance:
Eric Lewis, M.S. Signature: _____
Date: _____

Disclaimer

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Oak Ridge National Laboratory managed and operated by UT-Battelle, LLC., for the U.S. Department of Energy under Contract No. DE-AC05-00OR22725.

DATA EVALUATION RECORD

EPA Secondary Reviewer:	**Manying Xue, Chemist, 05/26/2007**
STUDY TYPE:	Acute Eye Irritation - Rabbits (OPPTS 870.2400)
MRID NO:	47029308
DP BARCODE NO:	DP 338682
CASE NO:	Not reported
DECISION NO:	373758
TEST MATERIAL:	Aloe Herbal Horse Spray (EPA Reg. No. 66963-I, 0.75% Citronella Oil, 0.50% Cedar Oil, and 0.378% Eucalyptus Oil Eucalyptus Globulus, active ingredients)
PROJECT NO:	21104
SPONSOR:	Espree Animal Products, Inc., Grapevine, TX
TESTING FACILITY:	Eurofins/Product Safety Laboratories, Dayton, NJ
TITLE OF REPORT:	Primary Eye Irritation Study in Rabbits
AUTHOR:	Jennifer Durando
STUDY COMPLETED:	December 20, 2006
GOOD LABORATORY PRACTICE:	GLP Compliant
CONCLUSION:	Corneal opacity was noted on 1/3 rabbits at 1 and 24 hours after test material instillation with resolution by 48 hours. Iritis was noted on 3/3 rabbits one hour after test material instillation with resolution on one rabbit by 48 hours and on two rabbit by 72 hours. Positive conjunctival irritation (score 2 or 3) was noted one hour after test material instillation with resolution on one rabbit by 48 hours and on the other rabbits by 72 hours. The maximum average score was 18.0 at one hour after test material instillation. Aloe Herbal Horse Spray was moderately irritating.
CLASSIFICATION:	ACCEPTABLE -- TOXICITY CATEGORY III

I. STUDY DESIGN:

1. **Test Material:** Aloe Herbal Horse Spray containing 0.75% Citronella Oil, 0.50% Cedar Oil, and 0.378% Eucalyptus Oil Eucalyptus Globulus as active ingredients.

2. **Test Animals:** Three male young adult New Zealand White rabbits were received from Robinson Services, Inc., Clemmons, NC. The animals were housed individually in suspended stainless steel cages with mesh floors. The animals were fed Pelleted Purina Rabbit Chow No. 5326. Filtered tap water was available *ad libitum*. The environmental conditions of the animal room were as follows: temperature, 19-22°C; relative humidity, 48-72%; and photoperiod, 12 hour light/dark cycle. Air changes per hour were not reported.

3. **Methods:** The rabbits were ear-tagged: Nos. 3401 to 3403 and were acclimated for 14 days. The test material (0.1 mL/eye/animal) was applied in the conjunctival sac of the right eye, and the eye held closed for approximately one second. The left eye served as control. The eyes were examined and scored 1, 24, 48 and 72 hours and at 4 days after test material instillation.

II. RESULTS:

1. **Mortality:** All rabbits survived the study.

2. **Ocular Lesions:** Corneal opacity was noted on 1/3 rabbits at 1 and 24 hours after test material instillation with resolution by 24 hours (Table 1). Iritis was noted on 3/3 rabbits one hour after test material instillation with resolution on one rabbit by 48 hours and on two rabbit by 72 hours (Table 2). Positive conjunctival irritation (score 2 or 3) was noted one hour after test material instillation with resolution on one rabbit by 48 hours and on the other rabbits by 72 hours . The maximum average score was 18.0 at one hour after test material instillation (Table 3).

TABLE 1. Individual Male (M) and Female (F) Eye Scores w/ Time: Cornea (A=Density of Opacity, B=Area of Opacity)

Animal No.	1 hour		24 hours		48 hours		72 hours		4 days	
	A	B	A	B	A	B	A	B	A	B
3401	0	4	0	4	0	4	0	4	0	4
3402	0	4	0	4	0	4	0	4	0	4
3403	1	1	1	1	0	4	0	4	0	4

TABLE 2. Summary of Eye Irritation Scores with Time: Conjunctiva and Iris					
Score Conditions	**1 hour**	**24 hours**	**48 hours**	**72 hours**	**4 days**
Conjunctiva					
Erythema	2	2	1 to 2	1	0
Chemosis	1 to 2	1	0 to 1	0	0
Discharge	2-3	1 to 2	0 to 1	0	0
Iris	1	1	0 to 1	0	0

Irritation score is based on Draize Method

Scale for Scoring Ocular Lesions

Cornea

A. Opacity-degree of density (area most dense taken for reading)

No Opacity 0
Scattered or diffuse area, details of iris clearly visible 1*
Easily discernible translucent areas, details of iris slightly obscured 2*
Opalescent areas, no details of iris visible, size of pupil barely discernible 3*
Opaque, iris invisible 4*

B. Area of cornea involved

One quarter (or less) but not zero 1
Greater than one quarter, but less than half 2
Greater than half, but less than three quarters 3
Greater than three quarters, up to whole area 4
Score = A x B x 5 Total Maximum Score = 80

Iris

A. Values

Normal 0
Folds above normal, congestion, swelling, circumcorneal injection (any or all of these or combination of any thereof), iris still reacting to light (sluggish reaction is positive). 1*
No reaction to light, hemorrhage, gross destruction (any or all of these). 2*
Score = A x 5 Total Maximum Score = 10

Conjunctivae

A. Redness (refers to palpebral and bulbar conjunctivae excluding cornea and iris)

Vessels normal 0
Vessels definitely injected above normal 1
More diffuse, deeper crimson red, individual vessels not easily discernible 2*
Diffuse beefy red 3*

B. Chemosis

No swelling 0
Any swelling above normal (includes nictitating membrane) 1
Obvious swelling with partial eversion of lids 2*
Swelling with lids about half closed 3*
Swelling with lids about half closed to completely closed 4*

C. Discharge

No discharge 0
Any amount different from normal (does not include small amounts observed in inner canthus of normal animals) 1
Discharge with moistening of the lids and hairs just adjacent to lids 2
Discharge with moistening of the lids and hairs, and considerable area around the eye 3
Score = (A + B + C) x 2 Total Maximum Score = 20

* represents a positive response

TABLE 3. Summary of Total[a] and Primary Eye Irritation Scores with Time					
Animal #	1 hour	24 hours	48 hours	72 hours	4 days
3401	15	13	11	2	0
3402	15	13	4	2	0
3403	24	20	9	2	0
Average scores[b]	18.0	15.3	8.0	2.0	0.0

[a]Formula: Total Irritation Score = I + II + III, where,
I = Corneal Score = [Density (A) x Area (B)] x 5
II = Iris Score = Severity x 5
III = Conjunctival Score = [Erythema (A) + Chemosis (B) + Discharge (C)] x 2
[b]Average Primary Irritation = Sum of Total Irritation Scores ÷ 3

III. DISCUSSION:

Corneal opacity was noted on 1/3 rabbits at 1 and 24 hours after test material instillation with resolution by 48 hours. Iritis was noted on 3/3 rabbits one hour after test material instillation with resolution on one rabbit by 48 hours and on two rabbit by 72 hours. Positive conjunctival irritation (score 2 or 3) was noted one hour after test material instillation with resolution on one rabbit by 48 hours and on the other rabbits by 72 hours. The maximum average score was 18.0 at one hour after test material instillation. Aloe Herbal Horse Spray was moderately irritating and is in TOXICITY CATEGORY III. The packet classification is **ACCEPTABLE.**

DATA EVALUATION RECORD

ALOE HERBAL HORSE SPRAY

STUDY TYPE: PRIMARY DERMAL IRRITATION - RABBIT (870.2500)
MRID 47029309

Prepared for
Biopesticides and Pollution Prevention Division
Office of Pesticide Programs
U.S. Environmental Protection Agency
One Potomac Yard
2777 South Crystal Drive
Arlington, VA 22202

Prepared by
Toxicology and Hazard Assessment Group
Environmental Sciences Division
Oak Ridge National Laboratory
Oak Ridge, TN 37831
Task Order No. 07-033

Primary Reviewer:
Susan Chang, M.S. Signature: _____
Date: _____

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Robert H. Ross, M.S., Group Leader Signature: _____
Date: _____

Quality Assurance:
Eric Lewis, M.S. Signature: _____
Date: _____

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Oak Ridge National Laboratory managed and operated by UT-Battelle, LLC., for the U.S. Department of Energy under Contract No. DE-AC05-00OR22725.

DATA EVALUATION RECORD

EPA Secondary Reviewer:	**Manying Xue, Chemist, 05/26/2007**
STUDY TYPE:	Primary Dermal Irritation - Rabbits (OPPTS 870.2500)
MRID NO:	47029309
DP BARCODE NO:	DP 338682
CASE NO:	Not reported
DECISION NO:	373758
TEST MATERIAL:	Aloe Herbal Horse Spray (EPA Reg. No. 66963-I, 0.75% Citronella Oil, 0.50% Cedar Oil, and 0.378% Eucalyptus Oil Eucalyptus Globulus, active ingredients)
PROJECT NO:	21105
SPONSOR:	Espree Animal Products, Inc., Grapevine, TX
TESTING FACILITY:	Eurofins/Product Safety Laboratories, Dayton, NJ
TITLE OF REPORT:	Primary Skin Irritation Study in Rabbits
AUTHOR:	Jennifer Durando
STUDY COMPLETED:	December 20, 2006
GOOD LABORATORY PRACTICE:	GLP Compliant
CONCLUSION:	Well defined moderate to severe erythema was noted on all rabbits 30-60 minutes after patch removal that persisted through day 14. Clearance on two rabbits was noted by day 14. Slight edema was noted on all animals 30-60 minutes after patch removal with clearance by Day 14. The primary irritation index was 3.8.
CLASSIFICATION:	ACCEPTABLE -- TOXICITY CATEGORY III

I. STUDY DESIGN:

1. **Test Material:** Aloe Herbal Horse Spray containing 0.75% Citronella Oil, 0.50% Cedar Oil, and 0.378% Eucalyptus Oil Eucalyptus Globulus as active ingredients.

2. **Test Animals:** Three female young adult New Zealand White rabbits were received from Robinson Services, Inc., Clemmons, NC. The animals were housed individually in suspended stainless steel cages with mesh floors. The animals were fed Pelleted Purina Chow No. 5326. Filtered tap water was available *ad libitum*. The environmental conditions of the animal room were as follows: temperature, 19-22°C; relative humidity, 46-72%; and photoperiod, 12 hour light/dark cycle. Air changes per hour were not reported.

3. **Methods:** The rabbits were ear-tagged, Nos. 3501to 3503, and were acclimated for 8 days. The fur on the dorsal trunk of each rabbit was clipped on the day prior to treatment. The rabbits were treated with 0.5 mL of test material applied on a 6 cm^2 clipped intact site, and the site covered with gauze pad. The pad and entire trunk were wrapped with a semi-occlusive Micropore tape and Elizabethan collars were placed on the rabbits. The covering and the collar were removed four hours later and the site cleansed to remove any residual test material. The animals were observed at least once daily for gross toxicity and behavior changes during the study. Dermal examination was recorded at 1, 24, 48, and 72 hours and at 7, 10, and 14 days after removal of the patch.

II. RESULTS:

1. **Mortality:** All rabbits survived the study.

2. **Dermal responses:** Well defined erythema was noted on 2/3 rabbits 30-60 minutes after patch removal that persisted through 72 hours. The erythema reduced on one rabbit by Day 7 and persisted on one rabbit through Day 14. The third rabbit had well defined erythema 30-60 minutes after patch removal, moderate to severe erythema by 24 hours, well defined erythema at 72 hours, that reduced to very slight erythema by Day 10. The primary irritation index was 3.8.

Irritation Scores:

TABLE 1. Summary of individual rabbit's dermal irritation scores with time

	Hours				Days		
Animal Nos.	1	24	48	72	7	10	14
3501	2/2[a]	2/2	2/1	2/1	1/1	1/1	1/0
3502	2/2	2/2	2/2	2/1	1/1	0/0	0/0
3503	2/2	3/2	2/2	2/1	1/1	1/0	0/0

Data taken from Table 1, p. 13, MRID 47029309.
[a]Erythema/Edema

Description of rating method:

Evaluation of Skin Reaction:	**Score**
Erythema formation:	
No erythema	0
Very slight erythema (barely perceptible)	1
Well-defined erythema	2
Moderate to severe erythema	3
Severe erythema (beet redness) to slight eschar formation (injuries in depth)	4

Edema Formation:	
No edema	0
Very slight edema (barely perceptible)	1
Slight edema (edges of area well-defined by definite raising)	2
Moderate edema (raised approximately 1 mm)	3
Severe edema (raised by more than 1 mm extending beyond the area of exposure)	4

III. DISCUSSION:

Well defined erythema was noted on 2/3 rabbits 30-60 minutes hour after patch removal that reduced to very slight erythema on one rabbit through Day 7 with clearance by Day 10 and on another rabbit through Day 14. The third rabbit had well defined erythema 30-60 minutes after patch removal, moderate to severe erythema by 24 hours, well defined erythema by 48 and 72 hours, that reduced to very slight erythema by Day 10 with clearance by Day 14. Slight edema was noted on all animals 30-60 minutes after patch removal that persisted on some animals through Day 14. The primary irritation index was 3.8. Aloe Herbal Horse Spray was moderately irritating and is in TOXICITY CATEGORY III. The packet classification is **ACCEPTABLE.**

DATA EVALUATION RECORD

ALOE HERBAL HORSE SPRAY

STUDY TYPE: SKIN SENSITIZATION - GUINEA PIG (870.2600)
MRID 47029310

Prepared for
Biopesticides and Pollution Prevention Division
Office of Pesticide Programs
U.S. Environmental Protection Agency
One Potomac Yard
2777 South Crystal Drive
Arlington, VA 22202

Prepared by
Toxicology and Hazard Assessment Group
Environmental Sciences Division
Oak Ridge National Laboratory
Oak Ridge, TN 37831
Task Order No. 07-033

Primary Reviewer:
Susan Chang, M.S. Signature: _____
Date: _____

Secondary Reviewers:
H. Tim Borges, M.T.(A.S.C.P.), Ph.D., D.A.B.T. Signature: _____
Date: _____

Robert H. Ross, M.S., Group Leader Signature: _____
Date: _____

Quality Assurance:
Eric Lewis, M.S. Signature: _____
Date: _____

Disclaimer

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Oak Ridge National Laboratory managed and operated by UT-Battelle, LLC., for the U.S. Department of Energy under Contract No. DE-AC05-00OR22725.

DATA EVALUATION RECORD

EPA Secondary Reviewer:	**Manying Xue, Chemist, 05/26/2007**
STUDY TYPE:	Skin Sensitization - Guinea Pigs (OPPTS 870.2600)
MRID NO:	47029310
DP BARCODE NO:	DP 338682
CASE NO:	Not reported
DECISION NO:	373758
TEST MATERIAL:	Aloe Herbal Horse Spray (EPA Reg. No. 66963-I, 0.75% Citronella Oil, 0.50% Cedar Oil, and 0.378% Eucalyptus Oil Eucalyptus Globulus, active ingredients)
PROJECT NO:	21106
SPONSOR:	Espree Animal Products, Inc., Grapevine, TX
TESTING FACILITY:	Eurofins/Product Safety Laboratories, Dayton, NJ
TITLE OF REPORT:	Dermal Sensitization Study in Guinea Pigs (Buehler Method)
AUTHOR:	Jennifer Durando
STUDY COMPLETED:	December 20, 2006
GOOD LABORATORY PRACTICE:	GLP Compliant
CONCLUSION:	After three consecutive weekly inductions, the test animals showed positive signs of irritation 24 and 48 hours after challenge. Aloe Herbal Horse Spray was a dermal sensitizer.
CLASSIFICATION:	ACCEPTABLE

I. STUDY DESIGN:

1. **Test material:** Aloe Herbal Horse Spray containing 0.75% Citronella Oil, 0.50% Cedar Oil, and 0.378% Eucalyptus Oil Eucalyptus Globulus as active ingredients.

2. **Test animals:** Thirty female Hartley guinea pigs were received from Elm Hill Breeding Labs, Chelmsford, MA, were assigned to groups, and weighed 318-403 g at experiment start. The body weight was not reported for four males that were used for preliminary irritation testing. The young adult animals were housed individually in suspended stainless steel cages with mesh or plastic perforated floors. The animals were fed pelleted Purina Guinea Pig Chow No. 5025. Filtered tap water was available *ad libitum*. The environmental conditions of the animal room were as follows: temperature, 19-22°C; relative humidity, 48-75%; and photoperiod, 12 hour light/dark cycle. Air changes per hour were not reported.

3. **Methods:** Male and Female guinea pigs were marked with color codes and grouped: Preliminary irritation testing – Nos. 3680 to 3683 (males); Test – Nos. 3601 to 3620 (females); Naive Control – Nos. 3621 to 3630 (females). The guinea pigs were acclimated for 7-39 days. The animals were induced and challenged according to the method of Buehler. From the results of the preliminary irritation testing, undiluted test material was used for induction and challenge. The dorsal and flank areas of 20 test guinea pigs and 10 naive control animals were clipped prior to each treatment. For the induction, 0.4 mL undiluted test material was applied to the animal using a Hill Top Chamber secured with non-allergenic adhesive tape. The chamber and excess test material were removed after six hours. The procedure was repeated once each week for three consecutive weeks. Twenty-seven days after the first induction, the test animals were challenged with 0.4 mL of undiluted test material under occlusion to naive sites. At challenge, a naive control group (10 animals) was treated with 0.4 mL of undiluted test material. Reactions were scored at approximately 24 and 48 hours following induction and challenge application.

II. RESULTS:

1. **Mortality:** All animals survived the study.

2. **Body Weight:** All animals gained weight during the study.

3. **Skin Effects:** Very faint usually non-confluent erythema was noted on 8/20 test animals 24 hours after the first induction with clearance on 4/12 animals by 48 hours. Very faint usually non-confluent erythema was noted on 12/20 test animals 24 hours after the second induction that persisted through 48 hours. Very faint usually non-confluent erythema and faint usually confluent erythema were noted on 11/20 and 8/20 test animals, respectively, 24 hours after the third induction and on 15/20 and 3/20 test animals, respectively, 48 hours after the third induction. Faint usually confluent erythema was noted on 11/20 test animals 24 hours after challenge and on 9/20 test animals 48 hours after challenge. Very faint usually non-confluent erythema was noted on 6/10 naive control animals 24 hours after challenge with clearance on four animals by 48 hours.

TABLE 1. Summary of Individual Erythema Challenge Scores with Time [a]								
	24 hours				48 hours			
Erythema Score	0	0.5	1.0	2.0	0	0.5	1.0	2.0
Treated	1	8	11	0	3	8	9	0
Naive Control	4	6	0	0	8	2	0	0

[a]Number of animals affected
Evaluation score is based on Buehler Grading Scale.

Scale for Scoring Skin Reaction

Buehler sensitization scoring scale

Erythema	**Score**
No reaction	
Very faint, usually nonconfluent	0.5
Faint, usually confluent	1
Moderate	2
Severe with or without edema	3

III. DISCUSSION:

After three consecutive weekly inductions, the test animals showed positive signs of reactivity while the naive control animals showed no positive signs of reactivity 24 and 48 hours after challenge. The study included an alpha-hexylcinnamaldehyde (HCA) positive control study which was carried out within six months of the study and the results were appropriate. Aloe Herbal Horse Spray was a dermal sensitizer. The packet is classified as **ACCEPTABLE.**